

K. E. BECKER & J. L. KNAPP.
 BUILDING MATERIAL.
 APPLICATION FILED OCT. 31, 1911.

1,048,484.

Patented Dec. 31, 1912.

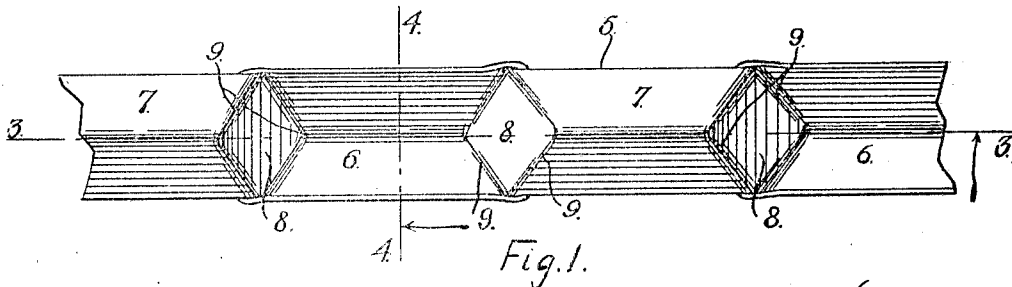


Fig. 1.

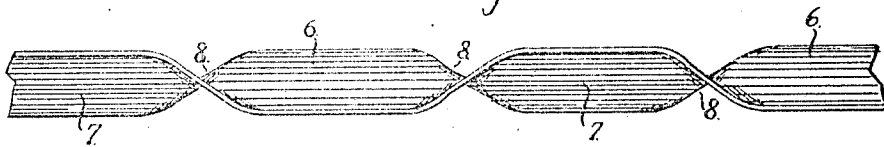


Fig. 2.

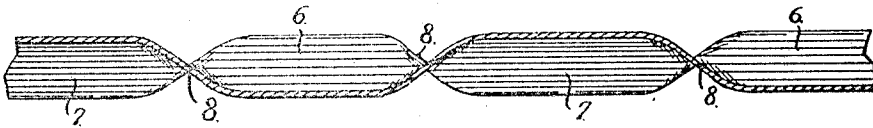


Fig. 3.

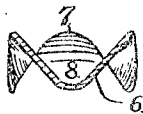


Fig. 4.

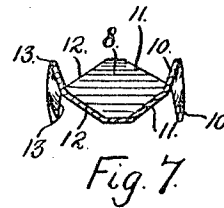


Fig. 7.

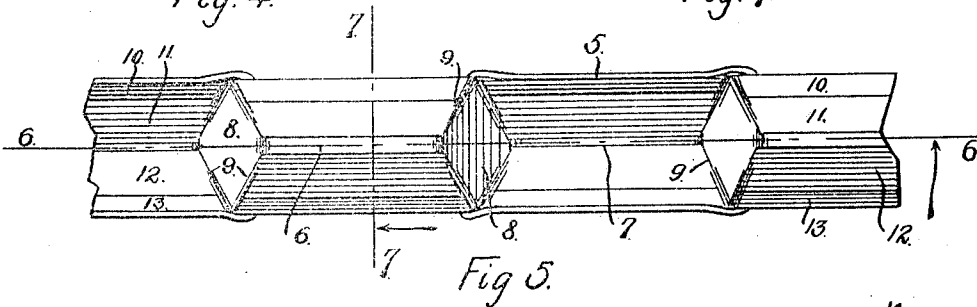


Fig. 5.

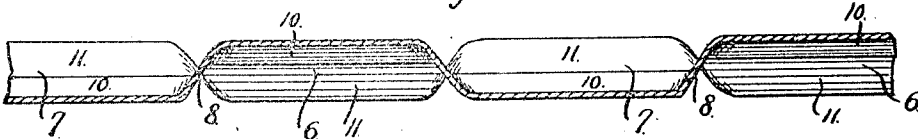


Fig. 6.

Witnesses
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UNITED STATES PATENT OFFICE.

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BUILDING MATERIAL.

1,048,484.

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To all whom it may concern:

Be it known that we, KARL E. BECKER and JOHN L. KNAPP, citizens of the United States, residing in the city and county of Denver and State of Colorado, have invented certain new and useful Improvements in Building Material; and we do declare the following to be a full, clear, and exact description of our invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawing, and to the figures of reference marked thereon, which form a part of this specification.

Our invention relates to improvements in building material and has for its object the provision of material of this character which may be effectively used as a reinforcement for concrete, columns and bars used for building purposes.

Another object of our invention resides in the provision of building material of this character shaped in such manner as to greatly increase the strength of the same.

Another object of our invention resides in the shaping of a reinforcing bar in such a manner as to obtain the greatest possible degree of strength without increasing the relative size of the bar.

Another object of our invention resides in the provision of an article of manufacture embodying certain features of construction whereby the strength of the article is greatly increased.

Our invention consists, in brief, of a metal bar stamped in such a manner as to form alternately arranged concave and convex portions on opposite sides of the bar throughout the length of the latter. By virtue of this construction the bar is rendered much stronger than the ordinary flat or smooth surfaced bar. In order to effectively carry out the increasing of the strength of the bar the convex surface of each convex section of the bar on each side of the bar gradually taper off into the concavity of the adjacent convex sections of the bar.

Having set forth the objects of our invention and described the same in brief we will now proceed to describe the same in detail, reference being had to the accompanying drawing, in which is illustrated an embodiment thereof.

In the drawing: Figure 1 is a top plan view of our improved reinforcing bar. Fig.

2 is a side view of our improved reinforcing bar. Fig. 3 is a longitudinal section taken on the line 3—3, Fig. 1. Fig. 4 is a cross section taken on the line 4—4, Fig. 1. Fig. 5 is a top plan view of a slightly modified form of our improved reinforcing bar. Fig. 6 is a longitudinal section of the modified form of our improved reinforcing bar, taken on the line 6—6, Fig. 1. Fig. 7 is a cross section of the modified form of our improved reinforcing bar taken on the line 7—7, Fig. 5.

The same reference characters indicate the same parts in all views.

Let the numeral 5 designate our improved reinforcing bar in its entirety, the numeral 6 a concave section of the bar and the numeral 7 a convex section of the bar. Each extremity of the convex sections on opposite sides of the bar taper gradually into the concavity of the adjacent concave section 6 as shown at 8, whereby in order to break the bar at the point of juncture of the different sections the same would have to be broken on lines extended at angles to each other as shown at 9 or else in a straight line directly across the convex surface of one of the sections. It may be readily seen that it would be difficult to break the bar on lines extended at angles to each other and that it would be equally as difficult to break the bar on a line transversely of one of the convex sections, therefore the strength of the reinforcing bar is largely increased when constructed in accordance with our invention.

Our improved reinforcing bar is formed from an ordinary straight and flat metal bar, alternately arranged convex and concave portions being formed on each side preferably by a die and stamp, however, any other suitable machinery may be used for forming the alternately arranged convex and concave portions. The opposite side of each convex section 6 is of concave shape and similarly the opposite side of each convex section 7 is of concave shape. While we have referred to certain sections as concave and others as convex, it must be understood that when the bar is reversed to view the same from the opposite side the sections which have been described as concave and convex, are respectively convex and concave, when the bar is reversed to view the same from the opposite side.

The form of our invention illustrated from Figs. 5 to 7 inclusive, is substantially the same construction as the form hereto-

fore described. However certain specific differences exist which we will now proceed to describe. These differences reside principally in the forming of additional angles in the different sections of the reinforcing bar. Each of the sections of a bar are provided with sides 10, 11, 12 and 13 forming angles with each other and by virtue of which the strength of the bar is increased to a greater extent. The method of forming the alternately arranged concave and convex sections on opposite sides of the bar is substantially the same as that described in connection with the first described form of my invention and need not be described here in reference to the present form of the invention. The convex surface of each section merges into the concavity of the adjacent sections in the same manner as described in view of the first described form of my invention and for this reason is not considered necessary to go into detail of the same in connection of the present form of the invention. In other words the modified form of our invention is substantially the same in all respects with the exception of the additional sides with which the sections are provided as described above.

Our improved building material may be used for various purposes, but its most common use is for the reinforcement of concrete and while we have described the same in this specification to be used as a reinforcing bar we anticipate many other practical uses and purposes of the same, therefore, it is understood that we are not limited to any particular use or purpose of the invention nor to the specific construction described and illustrated herein, and that the domain of our invention is governed only by the scope of the appended claims.

Having thus described our invention what we claim is,

1. An article of manufacture consisting

of a bar having on opposite sides thereof in longitudinal alinement throughout the length of the bar alternately arranged convex and concave sections, the convex surface of each section at its extremities gradually merging into the concavity of the adjacent sections and terminating on lines extending at angles to each other.

2. An article of manufacture consisting of a bar having on opposite sides thereof in longitudinal alinement alternately arranged concave and convex sections, the extremities of each concave section being closed by the extremities of the adjacent convex sections.

3. A reinforcing bar consisting of alternately arranged concave and convex sections on opposite sides of the bar, the said concave and convex sections being arranged end to end throughout the length of the bar, the concave and convex sections of one side of the bar being respectively convex and concave on the opposite side of the bar, the convex sections of one side of the bar closing the extremities of the adjacent concave sections of the same side of the bar, substantially as described.

4. A building and construction material consisting of a metallic bar having on opposite sides thereof in longitudinal alinement alternately arranged convex and concave sections, the convex surface of each section merging into the concavity of the adjacent sections, the extremities of each convex section being tapered from the opposite edges of the section into the said concave sections, substantially as described.

In testimony whereof we affix our signatures in the presence of two witnesses.

KARL E. BECKER.
JOHN L. KNAPP.

Witnesses:

OLGA BERLEY,
FELIX THIES.